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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,255	11/28/2001	John H. Lieder	024/35	2968

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EXAMINER

BRINEY III, WALTER F

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/996,255

Applicant(s)

LIEDER ET AL.

Examiner

Walter F Briney III

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities:

The first line of the disclosure claims priority benefit to provisional patent application no. 60/315,797, filed August 27, 2001. However, the USPTO records indicate that the filing date for the above application is August 29, 2001.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8, 9, 13, 14, 17, 18, 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang et al. (US Patent 5,987,120) in view of Albouy (US Patent 4,540,853).

Claim 1 is limited to a **circuit for detecting a reversal in polarity**. Hwang discloses a device for detecting reversal of voltages on a telephone line (abstract). Hwang discloses a Schmidt trigger (i.e. a **Schmidt trigger connected in series with the low-pass filter**) (figure 1, element 593). Hwang discloses a low-pass filter (figure 1, elements 59,591, 592). Hwang also discloses a second Schmidt trigger (figure 1, element 58), which acts to characterize the existing line voltage, but Hwang does not

disclose the construction of the Schmidt trigger. Therefore, Hwang anticipates all limitations of the claim with the exception of **a differential amplifier**. Albouy teaches the standard construction of an analog-to-digital Schmidt trigger like the one used by Hwang. The device includes a **differential amplifier** (Albouy, figure 3, element 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to construct a Schmidt trigger using a differential amplifier as taught by Albouy for the purpose of implementing the polarity detection circuit of Hwang.

Claim 2 is limited to **the circuit described in claim 1**, as covered by Hwang in view of Albouy. Albouy teaches **an operational amplifier** (figure 3, element 2) **having a feedback loop from an output terminal thereof to a non-inverting input terminal thereof**. Therefore, Hwang in view of Albouy makes obvious all limitations of the claim with the exception of **a feedback loop from an output terminal thereof to an inverting input terminal thereof**. It is noted that the circuit of Hwang is disclosed with a non-inverting Schmidt trigger (figure 1, element 58) coupled with a NMOS transistor (figure 1, element 59). However, reversing the inputs and feedback of the Schmidt trigger and using a PMOS transistor will result in the same circuit, it is merely a reversal of internal polarity and is obvious, see *In re Gazda*, 219 F.2d 449, 104 USPQ 400 (CCPA 1955). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 3 is limited to **the circuit described in claim 1**, as covered by Hwang in view of Albouy. Albouy teaches that **the Schmidt trigger comprises an operational amplifier having a feedback loop from an output terminal thereof to a non-**

**inverting input terminal thereof** (figure 3, element 2). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 4 is limited to a **method for detecting a polarity reversal in a telephony circuit**. It is noted that steps a-c of this claim are related to making the connections necessitated by the circuit of claim 1, as covered by Hwang in view of Albouy. Clearly, the connections are inherently required and as such Hwang in view of Albouy makes obvious these limitations. Furthermore, claim 4 includes the limitation of **determining polarity stasis or reversal based upon the output of the Schmidt trigger**. Hwang discloses determining the existence of a polarity reversal by examining the output of the first Schmidt trigger (figure 1, element 593) (column 3, lines 10-14 and 36-40). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claims 5 and 6 comprise making the connections necessary for the devices of claims 2 and 3, respectively.

Claims 8 and 9 are essentially the same as claims 2 and 3, respectively, and are rejected for the same reasons.

Claim 13 is limited to inherent properties of the circuit components of figure 1 disclosed by Hwang, thus it is rejected for the same reasons.

Claim 14 is limited to **the method of claim 13**, as covered by Hwang in view of Albouy. Hwang discloses that the output of the first mentioned Schmidt trigger (figure 3, element 593) is an input to a counter circuit (figure 3) (i.e. **wherein the output of the polarity reversal detector operates to do at least one of setting a flag, becoming**

**stored in a memory, or driving an indicator).** Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 17 is limited to **the method of claim 13**, as covered by Hwang in view of Albouy. Hwang discloses a low-pass filter (figure 1, elements 59, 591, 592), which are used for suppressing polarity transition detections from ringing voltages (i.e. **wherein the defined time is such so as to filter out any polarity reversal induced by an incoming ring signal**) (column 2, lines 45-59). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 18 is limited to **the method of claim 13**, as covered by Hwang in view of Albouy. Hwang discloses a Schmitt trigger (figure 1, element 593). Schmitt triggers are known to include a hysteresis effect that is selected to prevent unwanted transitions. Because the device of Hwang is designed only to detect true polarity reversals, it is inherent that the Schmitt trigger is designed to **filter out any polarity reversal caused by any of battery voltage drops, line disconnections, or loop current drops** (column 1, lines 39-42). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 20-22 are essentially the same as claim 1, and are rejected for the same reasons.

Claim 23 is essentially the same as claim 13, and is rejected for the same reasons.

Claim 24 is limited to **the method of claim 23**, as covered by Hwang in view of Albouy. Hwang discloses a low-pass filter (figure 1, elements 59, 591, 592) that is

operative to reduce the levels of ringing inputs to a level where a Schmidt trigger (figure 1, element 593) will not detect a polarity transition (column 2, lines 45-59). However, Hwang does not disclose a specific time constant needed for such reduction.

Therefore, Hwang in view of Albouy have been shown to make obvious all limitations of the claim with the exception **wherein said minimum temporal duration is at least 67 milliseconds**. Albouy teaches that the configuration of Hwang requires a time constant of 70 milliseconds (i.e. **at least 67 milliseconds**) (column 2, lines 33-55). Therefore, Hwang in view of Albouy makes obvious all limitations of the claim.

Claim 25 is limited to **the method of claim 23**, as covered by Hwang in view of Albouy. As presented in detail apropos claim 18, the Schmidt trigger of Hwang (figure 1, element 593) will be selected to reduce "bouncing" effects (column 1, lines 39-44). However, no detailed ranges are given. Therefore, Hwang in view of Albouy makes obvious all limitations of the claim with the exception **wherein said relative minimum voltage is such that a comparator reaches 2/3 of the opposite saturation voltage**. However, the applicant does not disclose that the comparator output reaching 2/3 of the opposite saturation voltage provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art would have expected applicant's invention to perform equally well with any output ratio derived in the bounds of due experimentation, because the optimal ratio for noise rejection is dependent on the type of system the device is used in, thus experimentation would yield superior results. It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify Hwang in view of Albouy to obtain the invention as specified in claim 25.

Claim 26 is rejected for the same reasons as claim 25.

Claim 27 is essentially the same as claim 17 and is rejected for the same reasons.

Claims 28 and 29 are essentially the same as claim 18, and are rejected for the same reasons.

Claims 7, 10-12, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang in view of Albouy and further in view of Bijman.

Claim 7 is limited to **the method as claimed in claim 4**, as covered by Hwang in view of Albouy. Hwang discloses capacitors (figure 1, elements C1, C2) that block DC current from entering the detector. Therefore, Hwang in view of Albouy makes obvious all limitations of the claim with the exception **wherein the differential input voltage comprises DC voltage**. Bijman teaches polarity detection circuitry (figure 3). The input of the detector uses a differential amplifier, whose output is coupled to a zero-crossing detector (i.e. first Schmidt trigger of Hwang 593). Replacing the input circuitry of Hwang with that of Bijman would result in the same functionality with a reduction in components. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the input circuitry of Hwang with the more economical input circuitry of Bijman for the purpose of reducing the number of parts needed and the space and cost associated with those extra parts.

Claims 10 and 11 are rejected for the same as claims 2 and 3, respectively.



Claim 12 is limited to **the method as claimed in claim 7**, as covered by Hwang in view of Albouy and further in view of Bijman. Hwang discloses a low-pass filter (figure 1, elements 59, 591, 592) that filter out ringing polarity transitions (i.e. **further comprising eliminating voltage polarity transitions that are shorter than a defined time**) (figure 2, graph C). Therefore, Hwang in view of Albouy and further in view of Bijman makes obvious all limitations of the claim.

Claim 15 is limited to **the method of claim 13**, as covered by Hwang in view of Albouy. Hwang in view of Albouy teaches detecting polarity reversals using well-known electronic components, but does not disclose their final product format. Therefore, Hwang in view of Albouy makes obvious all limitations of the claim with the exception **wherein the method is implemented in an integrated circuit**. Bijman teaches that polarity reversal detection circuits should be integrated on chip, as seen in figure 3. It would have been obvious to integrate the electronic circuits of Hwang in view of Albouy as a single integrated circuit as taught by Bijman for the purpose of making a more compact, robust, and cost effective electronic circuit.

Claim 16 is rejected for the same reasons as claim 15.

Claim 19 is rejected for the same reasons as claim 18.

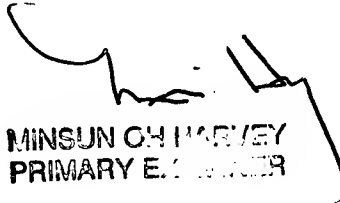
### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WFB  
5/25/04

  
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PRIMARY EXAMINER